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EXAMINER	
YOUNG, NATASHA E	

ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/591,436	HEINO ET AL.	
	Examiner	Art Unit	
	NATASHA YOUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3, 6, 8-9, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al (US 4,933,149) in view of Veariel et al (US 6,838,532 B2).

Regarding claims 1 and 3, Rhee et al discloses a method of producing polymers in a gas phase polymerization reactor, which has an elongated reactor body, defined by reactor walls, and an essentially vertically disposed central axis, the reactor comprising an upper part, in which a reactor bed of fluidized catalyst particles can be formed, and a lower part, in which monomer gas can be introduced, said upper and said lower parts being separated by a distribution plate, which promotes distribution into the fluidized bed of monomers flowing from the lower part into the upper part, according to which method a gas stream containing one or more monomer is fed into the lower part of the reactor (see column 6, lines 33-49; column 7, lines 7-12 and 39-65; and figure 1) which discloses gaseous components of make-up monomer is fed to the reactor system at point (18) via recycle line (22), the monomers are polymerized on the catalyst particles to form a polymer (see column 6, lines 33-60) which discloses a bed of growing polymer particles, former polymer particles and a minor amount of partially or totally activated precursor composition and/or catalyst, all fluidized by the continuous flow of polymerizable and modifying gaseous components in the form of make-up feed and recycle fluid through the reaction zone, unreacted monomers are withdrawn (see column 7, lines 39-65), and the polymer is recovered, or withdrawn (see column 7, lines 39-65).

Rhee et al does not disclose wherein gas stream is fed into the lower part of the reactor along at least 80% of the periphery of the inside of the reactor walls past the abutting distribution plate to prevent the formation of stagnant zones in the fluidized bed

at the reactor walls in the vicinity of the distribution plate, and a single distribution plate is used in the reactor body.

However, Rhee et al discloses the resultant velocities of the central and annular or peripheral streams and their relative mass flow rates assure intimate mixing of the streams and continued suspension of entrained liquid and solids in the upwardly flowing gas stream entering into the fluidized bed through the distribution plate means; it has been found that there is no permanent disentrainment of the liquid droplet or solids out of the gas streams under these operating conditions; and nor is there undesirable liquid flooding of the mixing chamber or solid (resin) buildup therein, which can result with disentrainment of liquid and solids, respectively (see column 5, lines 30-42) such that having a gas stream sweeping the periphery of the wall and having a sufficient velocity is necessary to prevent particles from adhering to the reactor wall and a distribution plate (28) with a proactive screen (27) (see column 9, lines 45-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the gas stream is conducted along at least 80% and 90-100% of the periphery of the inside of the reactor wall abutting the distribution plate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Veariel et al discloses a distribution plate (185) is positioned at the lower end of the reactor to help distribute the fluidizing gas to the reactor bed, and also to act as a

support for the reactor bed when the supply of fluidizing or cycle has is cut off (see column 6, lines 22-52 and figure 1).

Therefore, because these two different arrangements of distributor plates were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a dingle distributor plate for a distributor plate and protective screen.

Regarding claims 6 and 15-16, Rhee et al discloses wherein the flow rate of the gas stream conducted along the inside of the reactor wall is about 1 to 200 cm/s, about 10 to 100 cm/s, and about 30 to 70 cm/s (see Table 3), which discloses the superficial gas velocity in the fluidized bed is 2.2 ft/sec (67.056 cm/sec).

Regarding claim 8, Rhee et al discloses a gas distributor plate (28_ having holes of a diameter of one-half inch (see column 10, line67 through column 11, line 12) such that the openings of the distribution plate are essentially circular in cross-section.

Regarding claim 9, Rhee et al does not disclose a method wherein the part of the gas stream conducted along the inside preferably typically at least 10% of the total flow of gas through the plate.

However, Rhee et al discloses a method wherein the part of the gas stream conducted along the inside preferably forms an essential part (see column 9, lines 45-60), which discloses that the flow is a mixture of gas and generally a small amount of solid particles (resin) for a non-condensing mode of reactor operation and for a condensing mode of reactor operations, the flow is a mixture of gas, liquid droplets, and generally some solid particles (resin).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the part of the gas stream conducted along the inside preferably typically at least 10% of the total flow of gas through the plate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Regarding claim 17, Rhee et al does not disclose a method wherein the part of the gas stream conducted along the inside preferably forms at least 40% of the total flow of the gas through the plate.

However, Rhee et al discloses the resultant velocities of the central and annular or peripheral streams and their relative mass flow rates assure intimate mixing of the streams and continued suspension of entrained liquid and solids in the upwardly flowing gas stream entering into the fluidized bed through the distribution plate means; it has been found that there is no permanent disentrainment of the liquid droplet or solids out of the gas streams under these operating conditions; and nor is there undesirable liquid flooding of the mixing chamber or solid (resin) buildup therein, which can result with disentrainment of liquid and solids, respectively (see column 5, lines 30-42) such that having a gas stream sweeping the periphery of the wall and having a sufficient velocity is necessary to prevent particles from adhering to the reactor wall and a distribution plate (28) with a proactive screen (27) (see column 9, lines 45-60).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the part of the gas stream conducted along the inside

preferably forms at least 40% of the total flow of the gas through the plate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Claims 4-5 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al (US 4,933,149) and Veariel et al (US 6,838,532 B2) as applied to claim 1 above, and further in view of Yokoyama et al (US 4,578,879).

Regarding claim 4, Rhee et al discloses a method wherein the gas stream is conducted along the periphery of the inside of the reactor wall (see column 9, lines 45-60), where exists a peripheral annular flow stream (33a) along the lower side wall of the reactor.

Rhee et al does not disclose a method wherein the gas stream is conducted along the periphery of the inside of the reactor wall through an essentially annular opening formed between the outer edge of the distribution plate and the inside of the reactor wall.

Yokoyama et al discloses a support means for the gas distribution plate (12) also includes a plurality of projections (42) projecting inward from the inner wall of the vessel (10) and the projections (42) are arranged in a spaced relationship around the inner surface of the vessel wall (see column 4, lines 3-10 and figure 3) such that an essentially annular opening is formed between the outer edge of the distribution plate and the inside of the reactor wall.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Rhee et al with the teachings of Yokoyama et al for the predictable result of more passages for gas flow through the reactor.

Regarding claims 5 , 13, and 14, Rhee et al and Yokoyama et al do not disclose a method wherein the annular opening has a width of at least 1 mm, at least 2 to 20 mm, and at least 2 to 10 mm.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the annular opening has a width of at least 1 mm, at least 2 to 20 mm, and at least 2 to 10 mm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al (US 4,933,149) and Veariel et al (US 6,838,532 B2) as applied to claim 1 above, and further in view of Yamamoto et al (EP 0 721 795 A2).

Regarding claim 7, Rhee et al does not disclose a method wherein the distribution plate has openings, which are not covered by overcaps to allow for free flow of gas through the openings from the lower part of the reactor into the upper part.

Yamamoto et al discloses a distribution plate has openings, which are not covered by overcaps to allow for free flow of gas through the openings from the lower part of the reactor into the upper part (see page 5, line 17 through page 6, line 39 and figures 2-4).

Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al (US 4,933,149) in view of Veariel et al (US 6,838,532 B2) and Yokoyama et al (US 4,578,879).

Regarding claim 10, Rhee et al discloses an apparatus for producing polymers by gas phase polymerization, comprising an elongated reactor body, defined by reactor walls, said reactor body having an essentially vertically disposed central axis (see figure 1), the reactor (10) comprising an upper part (12), in which a reactor bed of fluidized catalyst particles can be formed, and a lower part (26a), in which monomer gas can be introduced, said upper and said lower parts being separated by a distribution plate (28), which promotes distribution into the fluidized bed of monomers flowing from the lower part into the upper part, a reactor inlet (26) and a reactor outlet at the top of the reactor (see figure 1), and a discharge device in the upper part of the reactor for recovering polymer product from the reactor (see column 12, lines 22-43.), characterized in that the distribution plate (28) inside the reactor body (see (see column 6, lines 33-49; column 7, lines 7-12 and 39-65; column 10, line 36 through column 11, line 12; and figure 1).

Rhee et al does not disclose at least one feed nozzle in the lower part of the reactor for introducing a gas stream containing one or more monomers into the lower part of the reactor, an outlet nozzle in the upper part of the reactor for recovering unreacted monomers and wherein the distribution plate inside the reactor body in such a way that an essentially annular opening is formed between the periphery of the plate edge and the reactor wall to allow for the flow of at least 80% of the gas stream fed into

the lower part of the reactor along the inside of the reactor walls and past the distribution plate, and there is a single distribution plate fitted inside the reactor body.

However, Rhee et al discloses that it was known in the art that a nozzle-type reactor inlet is satisfactory for successful operation of a fluidized bed reactor in the condensing mode but not in the non-condensing mode (see column 1, line 62 through column 2, line 9) and the resultant velocities of the central and annular or peripheral streams and their relative mass flow rates assure intimate mixing of the streams and continued suspension of entrained liquid and solids in the upwardly flowing gas stream entering into the fluidized bed through the distribution plate means; it has been found that there is no permanent disentrainment of the liquid droplet or solids out of the gas streams under these operating conditions; and nor is there undesirable liquid flooding of the mixing chamber or solid (resin) buildup therein, which can result with disentrainment of liquid and solids, respectively (see column 5, lines 30-42) such that having a gas stream sweeping the periphery of the wall and having a sufficient velocity is necessary to prevent particles from adhering to the reactor wall and a distribution plate (28) with a proactive screen (27) (see column 9, lines 45-60).

It would have been obvious to use an inlet nozzle with a deflector for the predictable result of improved mixing and control of the gaseous feed.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the gas stream is conducted along at least 80% of the periphery of the inside of the reactor wall abutting the distribution plate, since it has been held that where the general conditions of a claim are disclosed in the prior art,

discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Veariel et al discloses a discharge outlet nozzle (see claims 11, 18 and 25).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Rhee et al with the teachings of Veariel et al for the predictable result of control flow of discharge leaving the reactor.

In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have an inlet nozzle and an outlet nozzle, since it was known in the art that nozzle control fluid flow from one enclosed chamber to another (see MPEP 2144.03 (A-E)).

Yokoyama et al discloses a support means for the gas distribution plate (12) also includes a plurality of projections (42) projecting inward from the inner wall of the vessel (10) and the projections (42) are arranged in a spaced relationship around the inner surface of the vessel wall (see column 4, lines 3-10 and figure 3) such that the distribution plate inside the reactor body in such a way that an essentially annular opening is formed between the periphery of the plate edge and the reactor wall to allow for the flow of gas stream fed into the lower part of the reactor along the inside of the reactor walls and past the distribution plate, and there is a single distribution plate fitted inside the reactor body.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Rhee et al with the teachings of

Yokoyama et al for the predictable result of more passages for gas flow through the reactor.

Regarding claim 11, Rhee et al discuses an apparatus wherein reactor body has a circular cross-section transverse to the central axis and a distribution plate has a circular periphery (see figures 2 and 4).

Rhee et al does not disclose the diameter of the distribution plate being at least 1 mm, smaller than the inner diameter of the reactor body.

Yokoyama et al discloses a support means for the gas distribution plate (12) also includes a plurality of projections (42) projecting inward from the inner wall of the vessel (10) and the projections (42) are arranged in a spaced relationship around the inner surface of the vessel wall (see column 4, lines 3-10 and figure 3) such that an essentially annular opening formed between the outer edge of the distribution plate and the inside of the reactor wall.

It would have been obvious to one having ordinary skill in t he art at the time the invention was made to have the diameter of the distribution plate being at least 1 mm, smaller than the inner diameter of the reactor body, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Rhee et al with the teachings of Yokoyama et al for the predictable result of more passages for gas flow through the reactor.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al (US 4,933,149), Veariel et al (US 6,838,532 B2), and Yokoyama et al (US 4,578,879) as applied to claim 10 above, and further in view of Yamamoto et al (EP 0 721 795 A2).

Regarding claim 12, Rhee et al does not disclose an apparatus wherein the openings of the distribution plate have a circular cross-section transversally to the central axis of the reactor.

Yamamoto et al discloses an apparatus wherein the openings of the distribution plate have a circular cross-section transversally to the central axis of the reactor (see figure 2 and page 5, lines 19-51).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the teachings of Rhee et al with the teaching of Yamamoto et al for uniform flow in the fluidized bed zone (see Yamamoto et al page 5, line 28-35).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rhee et al (US 4,933,149), Veariel et al (US 6,838,532 B2), and Yokoyama et al (US 4,578,879) as applied to claim 10 above, and further in view of Haeberle et al (GB 1,014,205 A).

Regarding claim 18, Rhee et al discloses an apparatus wherein the reactor body has a circular cross-section transversal to the central axis and the distribution plate has a circular periphery (see figures 1, 2, and 4).

Rhee et al does not disclose the diameter of the distribution plate being at least about 2 to 20 mm smaller than the inner diameter of the reactor body.

Haeberle et al discloses the diameter of the distribution plate being smaller than the inner diameter of the reactor body (see page 2, line 113 through page 3, line 19 and figures 1-4).

Haeberle et al does not disclose the diameter of the distribution plate being at least about 2 to 20 mm smaller than the inner diameter of the reactor body.

Therefore, because these two arrangements of distribution plates were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a distribution plate with a diameter smaller than the inner diameter of the reactor body for a distribution plate with a diameter the same size as the inner diameter of the reactor body.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the diameter of the distribution plate being at least about 2 to 20 mm smaller than the inner diameter of the reactor body, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Response to Arguments

Applicant’s arguments, see Remarks, page 6, filed September 18, 2008, with respect to 112 rejections of claims 5-6, 9, and 11 have been fully considered and are persuasive. The 112 rejections of claims 5-6, 9, and 11 have been withdrawn.

Applicant's arguments filed September 18, 2008 have been fully considered but they are not persuasive. The applicant argues that the claimed invention produces the

unexpected results of preventing particles from adhering to the reactor wall by producing a gas stream sweeping at least 80% of the periphery of the wall and having a sufficient velocity.

The examiner disagrees.

Rhee et al discloses that it was known in the art that a nozzle-type reactor inlet is satisfactory for successful operation of a fluidized bed reactor in the condensing mode but not in the non-condensing mode (see column 1, line 62 through column 2, line 9) and the resultant velocities of the central and annular or peripheral streams and their relative mass flow rates assure intimate mixing of the streams and continued suspension of entrained liquid and solids in the upwardly flowing gas stream entering into the fluidized bed through the distribution plate means; it has been found that there is no permanent disentrainment of the liquid droplet or solids out of the gas streams under these operating conditions; and nor is there undesirable liquid flooding of the mixing chamber or solid (resin) buildup therein, which can result with disentrainment of liquid and solids, respectively (see column 5, lines 30-42) such that having a gas stream sweeping the periphery of the wall.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the gas stream is conducted along at least 80% of the periphery of the inside of the reactor wall abutting the distribution plate, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05 (II-A)).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATASHA YOUNG whose telephone number is 571-270-3163. The examiner can normally be reached on Mon-Thurs 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. Y./
Examiner, Art Unit 1797

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797